MOBILE PALLET WITH VARIOUS LOCKING MEANS

Area of the Invention

This invention relates to the area of sea freight containers, and in particular to pallets for use inside such containers, and a locking mechanism to maintain the pallets in a fixed location within a sea freight container.

Background to the Invention

It is well known for goods which are transported in sea freight containers to be loaded on pallets for ease of handling.

In recent times pallets have been developed of a type which are able to be rolled into and out of such a container. This mobile nature of such pallets can however cause difficulties in relation to their movement within a container when the container is either being moved for transport or, in particular, when the container is on a ship at sea.

Quite clearly a container which is on a ship is subject to a significant degree of movement and so are containers when they are being loaded and unloaded and being transported. Therefore any device, such as a pallet, which is inside the container and which is not securely fixed in a particular position in relation to the container is going to move. This in turn may contribute to problems associated

with damage to goods which are being transported on the pallet and, in an extreme event, to damage to the container itself.

Outline of the Invention

It is an object of this invention to provide a locking means for a mobile pallet for use inside a sea freight container.

The invention is a pallet for use with a sea freight container said pallet having a chassis which is provided with locomotion means enabling it to be rolled into and out of the container and also with locking means to immobilise it within the container.

It is preferred that the locomotion means be a plurality of rollers however wheels or other appropriate means could be used. It is further preferred that the pallet have an upper surface positioned on the chassis which surface is provided with an aperture over the location of any roller such that pallets of the same size are able to be stacked one upon the other.

It is preferred also that the locking means consists of a plurality of locking means adapted to function at different locations on the chassis.

A first locking mechanism is positioned at either side of the leading edge of the pallet when it enters the container. This mechanism is a device pivotally mounted about an axial member on the chassis such that the device is generally

parallel to the container side walls as the pallet moves into or out of the container. As the leading edge of the pallet approaches the interior rear wall of the container it is able to rotate outwardly from the chassis and to engage with the side walls of the container. It is preferred that the pivotally mounted device is a roller device. It is however envisaged that any appropriate mounting could be used or any engagement means for the device.

A second locking means is associated with the trailing edge of the pallet chassis. This locking means consists of a body member on either side of the rear of the pallet, said body housing a screw member which can be screwed out to engage with a side wall of the container. It is preferred that a locking nut be provided to screw up to the body thereby preventing unlocking of this mechanism.

A third locking means is positioned generally centrally on the trailing edge of the pallet chassis. This locking means is an extensible member able to be moved into close abutment with one or more rear doors of a container and held there preferably by means of a ratchet and pawl arrangement.

In order that the invention may be more readily understood a specific embodiment of the invention will be described by way of non-limiting example with reference to the following drawings.

Brief Description of the Drawing Figures

Fig. 1 shows a schematic view of the pallet of this invention;

Fig. 2 is a perspective view of an embodiment of the pallet leading edge locking mechanism;

Fig. 3 is a perspective view of an embodiment of a side locking mechanism at the trailing edge of a pallet;

Fig. 4 is a diagrammatic representation of an embodiment of a means for locating the trailing edge of a pallet in close abutment with container doors;

Description of a Preferred Embodiment of the Invention

In a preferred embodiment of the invention (as shown in Figure 1) a pallet 10 for a sea freight container is provided which has locomotion means in the form of wheels or rollers 20 and locking means to retain it in a fixed relation to the container interior.

The pallet has an upper surface 11 positioned on the chassis 19 which surface is provided with an aperture 12 over the location of any roller such that pallets of the same size are able to be stacked one upon the other.

It is preferred also that the locking means consists of a plurality of locking means adapted to function at different locations on the chassis.

A first locking mechanism 30 (Figure 2) is positioned at either side of the leading edge 14 of the pallet when it enters the container. This mechanism 30 is a

device pivotally mounted about an axial member 31 mounted on the chassis of the pallet.

In this embodiment of the invention the leading edge 14 and the trailing edge 16 of the pallet are formed from a channel shaped extrusion and axial members 31 are mounted adjacent corners of the leading edge of the pallet between opposing channel faces.

The locking member 30 consists of two parallel faces 32 pivotingly connected to 31 and separated by a member 34 about which a roller 33 can rotate. The arrangement is such that the device 30 is generally parallel to the container side walls 15 as the pallet moves into or out of the container. As the leading edge of the pallet approaches the interior rear wall of the container device 30 is able to rotate outwardly from the chassis and to engage with the side walls of the container.

It is preferred that the pivotally mounted device is a roller device. It is however envisaged that any appropriate mounting could be used or any engagement means for the device.

A second locking means 40 is associated with the trailing edge 16 of the pallet chassis. This locking means 40 consists of a body member 41 welded in side the trailing edge channel on either side of the rear of the pallet, said body member housing a screw member 42 which can be screwed out such that an end 43 thereof engages with a side wall of the container.

When the end 43 is engaged it is preferred that a locking screw 44 with lugs 45 be provided to screw up to the body member 41 thereby preventing unlocking of this mechanism.

A third locking means 50 is positioned generally centrally inside the channel fn the trailing edge 16 of the pallet chassis. This locking means has an extensible member 51 able to be moved into close abutment with one or more rear doors of the container.

Member 51 is welded to a rod 52 which is able to rotate through support members 58. Member 51 is positioned between and closely adjacent to twin ratchets 53 and 54 engaging with pawls 55 and 56 respectively. The teeth of these pawls are offset relative to one and other to provide for fine adjustment of member 51 when it is rotated outwards from trailing edge 16.

Locking member 50 is used to positively engage the trailing edge of a pallet with the rear doors of a container. In practice one container door can be closed and the member 51 is rotated out to closely abut that door, after which time the other door can be closed. The ratchet pawl arrangement can be easily released once the doors are reopened.

Locking member 30 acts to automatically located the pallet leading edge corners inside a container. This location is not a positive locking mechanism however and release is automatic when the pallet is withdrawn from the container. The

advantage of this device is that access to the interior of the container is not required to effect this release.

It is preferred that locking members 30 be used on all pallets and that either or both of locking members 40 and 50 be used to positively locate a pallet in position within a container. In particular locking member 50 can be used to fill any space left when one or more pallets are loaded into a single container.

Apart from the general requirements as to strength which would be self evident any appropriate materials can be used for the construction of the components of these locking mechanisms. In a preferred embodiment of the invention presumably these would be generally manufactured from strong metal products however the material of the rollers could be of some shock absorbing nature if that was desired.

The invention therefore provides a pallet which can be loaded and unloaded outside a sea freight container and then be rolled by a fork lift or the like into and out of such a container. The provision of the locking mechanisms used in association with the pallet means that produce of all kinds can be securely transported on the pallet without risk of damage during travel. Pallet loading can also be extremely secure in that loading and unloading can be effected outside a sea freight container.

Whilst one particular embodiment of the invention has been described herein it is to be understood that variations and modifications in the features described and the materials used can still lie within the scope of the invention.